Installation Restoration Program

Final Statement of Basis for Site LF-10, Field 2, North Landfill, Eglin Air Force Base



Final Statement of Basis for Landfill Site LF-10, Eglin Air Force Base

Objective

This Statement of Basis (SB) explains the proposed remedy for landfill (LF) site LF-10, the Field 2 North Landfill, designated in the U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) Hazardous and Solid Waste Act (HSWA) Permit (the Permit) for Eglin Air Force Base (AFB) as Solid Waste Management Unit (SWMU) D15. The site is located on Eglin Air Force Base (AFB) and managed under the Air Force Installation Restoration Program (IRP). A RCRA Facility Investigation (RFI), Human Health Risk Assessment (HHRA), Ecological Risk Assessment (ERA), and Corrective Measures Study (CMS) were conducted at this site and concluded that the operations formerly conducted at this site have had no significant effect on human health. Since future land use is not expected to deviate substantially from current land use, the CMS recommended a remedy of No Further Investigation Required with Land Use Controls (LUCs). The LUCs restrict future development of the site and restrict potable use of the groundwater beneath the site. This remedy will protect human health. No other remedies were evaluated. To implement the LUCs, a Land Use Controls Implementation Plan (LUCIP) will be developed by the Air Force for this site. The LUCIP will be approved by EPA and will also serve as the Corrective Measures Implementation Plan (CMIP), as required to implement a remedy, pursuant to RCRA.

The public is invited to comment on this proposed remedy for LF-10 or any other remedial alternatives, including those not previously identified. This SB includes information on how the public may participate in this decision making process.

Introduction

LF-10 was previously identified as SWMU D15 in the Permit for Eglin AFB, issued by EPA Region IV, effective September 16, 1986, and revised April 26, 1998. This SWMU is regulated under the Permit, which requires that SWMUs be investigated, remediated, and closed. The Permit requires that an SB be prepared which identifies the proposed remedy for the landfill, explains the rationale for the remedy selection, and allows for a Public Comment Period of 45 days.

EPA Region IV will finalize this decision by modifying the Permit to incorporate the corrective measure, susequent to Florida Department of Environmental Protection (FDEP) review of, and concurrence with, this SB, and the public comment period has ended. All information submitted during this time frame will be reviewed and considered before final approval. Eglin AFB, EPA, and FDEP have entered into a memorandum of agreement (MOA) which outlines the LUCs as described in the EPA Region IV Memorandum, *Assuring Land Use Controls at Federal Facilities*, dated April 21, 1998. This MOA serves as the LUC

Assurance Plan (LUCAP). A LUCIP will be developed by the Air Force IRP and will serve as the CMIP. The LUCIP will be implemented in accordance with EPA Policy.

This SB provides a summary of past investigative work performed at Site LF-10; however, this SB should not be considered a substitute for the actual technical documents. In addition to the information provided in this SB, more detailed information is provided in the *Installation Restoration Program RCRA Corrective Measure Study (Group II)* (O'Brien & Gere Engineers, Inc., July 1998). This report and other documents related to LF-10 can be found in the Eglin AFB Administrative Record, which is available for public review (see the last section of this SB for locations).

Background/History of LF-10

Eglin AFB is located within the Eglin Military Reservation in the Florida Panhandle. The Eglin Military Reservation comprises an area of approximately 740 square miles and includes portions of Okaloosa, Walton, and Santa Rosa counties. LF-10 is located in eastern Okaloosa County, west of Highway 285, approximately five miles northeast of Niceville, Florida (Figure 1).

An IRP Phase I Records Search was conducted in 1980 and identified LF-10 as a potential source of environmental contamination due to past waste disposal practices. In 1988, surface water and sediment samples were collected from the site as part of a limited screening effort. Subsequently, an RFI was conducted at LF-10 in 1994 and 1995, and an HHRA and ERA were completed for the site in 1996. Based on the results of the RFI, HHRA, and ERA, a CMS was conducted at LF-10. The results of the CMS are provided in the *Installation Restoration Program RCRA Corrective Measure Study (Group II)* (O'Brien & Gere, July 1998).

The following is a list of the principal historical documents for LF-10, which are available for public review at the locations provided in the last section of this SB:

- O'Brien & Gere Engineers, Inc., *Installation Restoration Program RCRA Corrective Measure Study (Group II)*, July 1998
- O'Brien & Gere Engineers, Inc., *Installation Restoration Program Human Health Risk Assessment (Group II)*, October 1997
- O'Brien & Gere Engineers, Inc., *Ecological Risk Assessment for Fifteen Sites (Group II)*, October 1997
- O'Brien & Gere Engineers, Inc., Installation Restoration Program RCRA Facility Investigation for Fifteen Sites (Group II), September 1996

As discussed in the CMS, LF-10 is approximately four acres in size and encompasses the upper portion of a hilltop at the origin of Nine Mile Creek. The topography is generally level for the majority of the site; however, it slopes sharply downward toward Beaver Pond to the north (Figure 2). The landfill operated from the 1960s to 1973 and reportedly received runway construction debris, building demolition debris, scrap metal, refuse, trash, and vehicle maintenance solvents. Material identified during a 1991 site reconnaissance included concrete rubble, wood debris, and other construction debris. The debris was removed and disposed of in 1993.

LF-10 is currently covered with moderately dense vegetation consisting of weeds and grass. There are no structures on the site. A 0.25-acre area of construction and demolition debris is located approximately 400 feet west of the LF-10 boundary.

The surficial sands and gravel at LF-10 extend approximately 100 to 125 feet below land surface (bls) and overlie the confining Pensacola Clay unit. The groundwater in this G-II aquifer is reported to be approximately 3.4 to 38 feet bls. FDEP defines a G-II aquifer as suitable for potable water use such that the groundwater has a total dissolved solids (TDS) content of less than 10,000 milligrams per liter (mg/L) (FDEP Rule 62-520.410, Florida Administrative Code).

At LF-10, groundwater flows northwest. Surface water runoff discharges into Beaver Pond, which discharges to the north into Nine Mile Creek and ultimately discharges into Choctawahatchee Bay approximately 15 miles from the site.

Proposed Remedy

The CMS recommended No Further Investigation Required with LUCs for LF-10. No other alternatives were evaluated. The results from the CMS indicate that the operations formerly conducted at this site have had no significant effect on human health. Future land use is not expected to deviate substantially from current land use. Should a change in current land use be required, it will be handled in accordance with the LUCAP and the LUCIP.

Due to the random nature in which landfills receive refuse, it is difficult to fully characterize the subsurface at the sites. Therefore, current and future use of the property will be limited and no residential use of the property will be allowed without the proper engineering controls. Depending on the location, nature, and intensity of potential future land use activities, the Air Force will conduct additional site investigation and assessment activities to determine the proper engineering controls if existing information is not adequate. In addition, due to potential impacts to the groundwater from the landfill, LUCs will be implemented within the boundaries of the site to ensure that the groundwater beneath the landfill is not used as a potable source. The following sections summarize the findings supporting the proposed remedy and outline the proposed LUCs and their implementation.

Nature of Contaminants

As part of the RFI, groundwater, surface soil, surface water, and sediment samples were collected from LF-10. The constituents that exceed their respective screening criteria are summarized in Table 1, along with their associated screening criteria and references.

Human Health Risk Assessment

Based on the data collected during the RFI, an HHRA was conducted for LF-10. Table 2 summarizes potential exposure groups evaluated in the HHRA and the corresponding exposure pathways.

TABLE 1Summary of Risk Driver Contaminants *LF-10, Eglin AFB*

Media	Contaminant	Maximum Concentration	Mean Concentration	Screening/ Background Value	Screening Value Reference
Surface Soil	Arsenic	8.83	2.86	0.37	Residential RBC/FL SCG
(mg/kg)	Aluminum	24,025	10,627	7800	Residential RBC/FL SCG
	Iron	5,699	3,116	2300	Residential RBC/FL SCG
Sediment	Aluminum	80798	46507	7800	Residential RBC/FL SCG
(mg/kg)	Antimony	5.8	4.39	3.1	Residential RBC/FL SCG
	Iron	30,741	16,442	2300	Residential RBC/FL SCG
	Thallium	1.01	0.93	0.63	Residential RBC/FL SCG
	Vanadium	72.6	43.0	55	Residential RBC/FL SCG
	Benzo(a)anthracene	1.55	0.81	0.88	Residential RBC/FL SCG
	Benzo(a)pyrene	1.55	0.81	0.088	Residential RBC/FL SCG
	Benzo(b)fuoranthene	1.59	0.94	0.88	Residential RBC/FL SCG
	Indeno(1,2,3-cd)pyrene	1.55	0.70	0.88	Residential RBC/FL SCG

NOTES:

Data and screening criteria are from Installation Restoration Program RCRA Facility Investigation for Fifteen Sites (Group II) (O'Brien & Gere Engineers, Inc., September 1996) and Installation Restoration Program Human Health Risk Assessment (Group II) (O'Brien & Gere Engineers, Inc., October 1997).

The identified screening values are the lower of the EPA Region III Risk Based Screening Concentrations or State of Florida Soil Cleanup Goals.

REFERENCE NOTES:

Residential RBC refers to the EPA Region III risk based concentration for residential soils, 1995.

FL SCG refers to the Florida Soil Cleanup Goals

TABLE 2Summary of Potential Exposure Groups and Pathways *LF-10, Eglin AFB*

	Exposure Pathway	Exposure Groups				
Media		Maintenance Workers	Recreational User	Future Residential Adults	Future Residential Children	
Surface Soil	Ingestion	Х	Х	Х	Х	
	Dermal Contact	Χ	Χ	X	X	
Sediment	Ingestion	Χ	Χ	X	X	
	Dermal Contact	X	X	X	X	

Human health cancer risks considered acceptable by EPA for selecting remedies under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [Title 40 of the Code of Federal Regulations (CFR) Part 300] fall within the range of 10-6 (one in a million) to 10-4 (one in 10,000). EPA uses a cumulative risk calculation in which all risk drivers (contaminants), exposure pathways, and media (groundwater, soil, surface water, and sediment) are totaled for each exposure group. FDEP further looks at the lifetime cancer risk for each individual risk driver in a single medium. For protection of human health, the FDEP cleanup goal is to achieve a maximum excess lifetime cancer risk of 1 x 10-6, for each individual risk driver. In other words, a typical person exposed to a chemical carcinogen at the FDEP cleanup goal and at a specified frequency could expect an increment of one chance in a million increase, above their existing lifetime cancer risk. FDEP considers site-specific cleanup levels greater than 1 x 10⁻⁶, if technical unfeasibility, disproportionate costs, or other relevant factors justify their impracticability. These levels, however, must be based on the ability to achieve an equivalent risk management level of 1 x 10-6 through reliable institutional controls or other effective means that manage the extent and frequency of exposure.

Human health cumulative cancer risks for the four potential exposure groups ranged from 10^{-7} to 10^{-5} under Average Exposure (AE) and Reasonable Maximum Exposure (RME) conditions. Therefore, these fall within the acceptable range of human health cancer risks. The following is a summary of RME lifetime cancer risks for a future residential adult and child:

- Surface soil: Adult 8 x 10⁻⁶; Child 2 x 10⁻⁵
- Sediment: Adult 7 x 10⁻⁵; Child 3 x 10⁻⁵

For non-cancer human health risk calculations under the different exposure scenarios, assuming RME conditions, estimated human health risks for effects other than cancer are acceptable [i.e., the sum of the hazard indices (HI) is equal to or less than 1]. A slightly elevated risk for effects other than cancer was estimated for hypothetical future residential children under the RME (HI=1.7) scenario. This non-cancer risk is due mainly to aluminum and arsenic concentrations in the surface soil, and aluminum and iron concentrations in sediment. The average HI for hypothetical future residential children is 0.3, which suggests that under typical residential uses, the analytes detected at LF-10 would not represent a significant risk to human health. The following is a summary of RME non-cancer risks for a future residential adult and child:

- Surface soil: Adult 0.1; Child 0.9
- Sediment: Adult 0.1; Child 0.8

Ecological Risk Assessment

Based on the data collected during the RFI, COPCs were determined for the ERA by comparing media detections for LF-10 to background values and ecologically based screening criteria. **Table 3** summarizes potential exposure groups evaluated in the ERA and the corresponding COPCs and exposure pathways.

Dermal contact exposures to COPCs were evaluated through comparisons to ambient water quality criteria and sediment guidance values formulated to be protective of aquatic

organisms, but not organism specific. Therefore, exceedances of criteria or guidance values indicate a potential for impact but do not necessarily represent an actual impact. COPC ingestion exposures were evaluated through food chain modeling using the hazard quotient (HQ) methodology. Potential COPCs with HQ results of less than 10 were eliminated from further evaluation.

TABLE 3Summary of Potential Exposure Groups, COPCs, Pathways *LF-10, Eglin AFB*

Media	Exposure Groups	COPCs	Exposure Pathways
Surface Water	Fish, frogs, salamanders, snakes, wading birds, small mammals	Al, Pb, Hg, Chlordane, BEHP, Anthracene, Chrysene, Indeno(1,2,3-cd)pyrene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Phenanthrene, Aldrin, Chlordane, PCBs	Dermal contact, ingestion
Sediment	Invertebrates, fish, frogs, salamanders, wading birds, small mammals	Al, arsenic, chromium, Fe, Pb, V, Acetone, 2-Butanone, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(ghi)perylene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Phenanthrene, Pyrene, BEHP, 4,4'-DDD, 4,4'-DDT, alpha-BHC, delta-BNC, PCB, Aldrin	Dermal contact, ingestion
Soil	Terrestrial reptiles, birds, and mammals	Al, As, Cr, Cu, Fe, Hg, Pb, V, Zn, 4,4'-DDT, Di-n-butyl phthalate, Toluene, Fluoranthene, Phenanthrene, Pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Aldrin, alpha-BHC, beta-BHC, delta-BHC, alpha-Chlordane, gamma-Chlordane, PCB	Ingestion

Detected surface soil COPCs that resulted in HQs > 10 for the terrestrial food chain consisted of aluminum, di-n-butyl phthalate, polynuclear aromatic hydrocarbons (PAHs), and 4,4'-DDT. These results indicate a potential for risk to sensitive receptors foraging in site soils.

Aluminum was the only detected surface water COPC that exceeded screening criteria for direct contact. This indicates only a potential risk due to the conservative nature of the criteria. The HQ result for aluminum in the aquatic food chain was >10. This indicates a potential risk to sensitive receptors foraging in aquatic environments of the site.

Detected sediment COPCs that exceeded comparison criteria for direct contact consisted of arsenic, chromium, iron, lead, acetone, PAHs, 4.4'-DDD, and 4.4'-DDT. Of these, only pyrene, fluoranthene, 4.4'-DDD, and 4.4'-DDT resulted in aquatic food chain HQs >10. The HQ result for aluminum was also >10. These results indicate a potential for risk to sensitive receptors foraging in aquatic environments of the site.

Proposed Remedy Implementation

The results from the CMS indicate that the operations formerly conducted at this site have had no significant effect on human health. However, based on the results of the HHRA and ERA, LF-10 may present a potential ecological risk due to the presence of aluminum and iron in the sediments. Therefore, LUCs will be implemented to reduce exposure to the sediments. In addition, due to the inherent nature of landfills, LF-10 has been recommended

for No Further Investigation Required with land use controls. The institutional controls will consist of the following LUCs:

- Fishing in the pond will be restricted to catch and release only and signs indicating such prohibitions will be posted.
- The property will be restricted from residential development without proper
 engineering controls. Depending on the location, nature, and intensity of potential
 future land use activities, the Air Force will conduct additional site investigation and
 assessment activities to determine the proper engineering controls if existing
 information is not adequate.
- Future development will be restricted from using the shallow aquifer under the site as a source of potable drinking water.
- Maintenance of existing utilities or replacement of existing utilities in the same location is allowed.
- The property will be inspected at least annually to ensure that unauthorized use of the property does not occur and that status of the property is unchanged. The Air Force will submit an annual site status report to both the EPA and FDEP, in accordance with the mutually approved LUCAP.
- The Air Force will notify EPA and FDEP upon the discovery of any unauthorized change in land use.
- For requests for major land use changes, written requests will be submitted to both the EPA and FDEP, in accordance with the mutually approved LUCAP. Requests will be submitted as soon as a major land use change is anticipated, to allow sufficient time for regulatory review and amendments to remedy selection decision documents.

A LUCIP will be developed to document the implementation of these LUCs. In addition, the LUCIP will designate an Eglin Environmental Management Restoration (EMR) representative to be responsible for compliance with the LUCs, and the LUCIP will be referenced in appropriate Eglin AFB planning documents. Further, if land use changes are required, the LUCIP and the LUCAP will address how the LUCs or remedy will be changed, if necessary.

By separate MOA dated December 23, 1999, with EPA and FDEP, Eglin AFB, on behalf of the Department of the Air Force, agreed to implement base-wide, certain periodic site inspection, condition certification and agency notification procedures designed to ensure the maintenance by Installation personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Air Force's substantial good-faith compliance with the procedures called for therein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by the Air Force, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Installation's substantial good faith compliance with the specific LUC maintenance

commitments reflected therein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred on may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection on human health and the environment.

Public Participation for LF-10

The public is encouraged to provide comments regarding the corrective action alternatives provided in this SB or any other remedial alternatives, including those not previously studied. The public can review information on the IRP at Eglin AFB and the investigations and actions taken under the Permit, including all reports and documents. The information repository and administrative record files are available at the following locations:

Eglin Air Force Base AAC/EMR 207 Second Street, Bldg. 216 Eglin AFB, FL 32542-5133 Technical Library 203 W. Eglin Blvd, Suite 300 Eglin AFB, FL 32542-5429

FDEP Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400

A 45-day public comment period will be held from April 10, 2000 to May 25, 2000. Comments received will be summarized, and responses will be provided in the upcoming Responses to Comments document. The Responses to Comments document will be prepared following the close of the public comment period. The Responses to Comments will be included with the final permit modification. If requested during the Public Comment Period, EPA will hold a public meeting to respond to any oral comments or questions regarding this action. The public will be notified of the date, time, and place of any public hearing as soon as it is scheduled.

To request a hearing or provide comments for LF-10, contact the following person in writing postmarked by May 25, 2000:

EPA – Region IV RCRA Programs Branch 61 Forsyth Street Atlanta, GA 30303

Attention: Mr. Jon Johnston, Chief

To request further information, you may contact one of the following people:

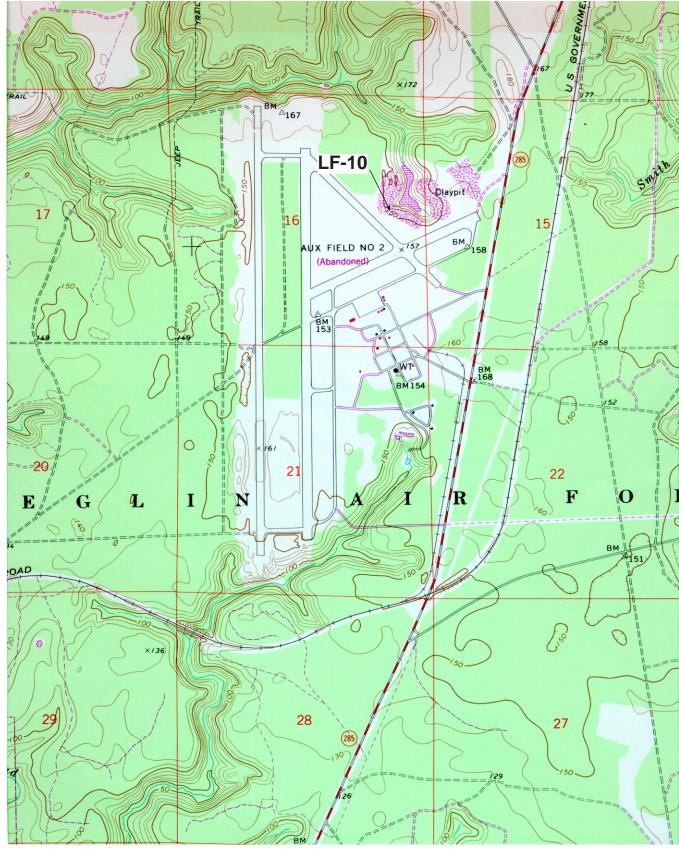
Mr. Howard H. Mathews III, R.E.M. Eglin AFB

207 N. 2nd Street, Bldg 216 Eglin AFB, FL 32542-5133 (850) 882-7791 Mr. Robert H. Pope EPA - Region IV Federal Facilities Branch 61 Forsyth Street Atlanta, GA 30303 (404) 562-8506 Mr. Greg Brown, P.E. FDEP Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32399-2400 (850) 921-6779

Important Dates to Remember

Public Comment period begins: April 10, 2000

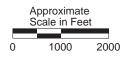
Public Comment period ends: May 25, 2000



Source: USGS Quadrangle, Niceville, FL, 1987

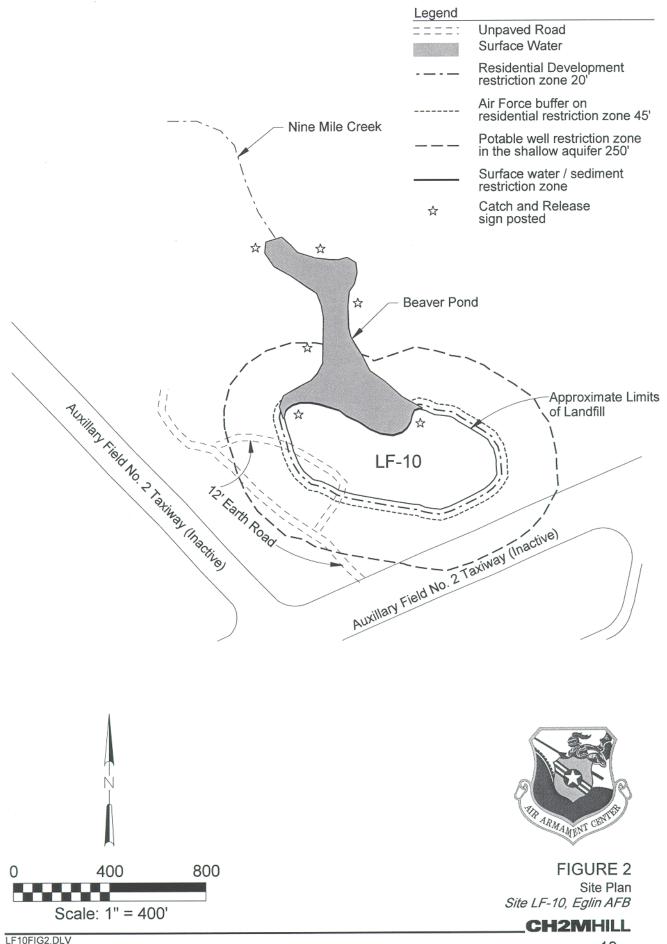
FIGURE 1

Topographic Map Site LF-10, Eglin AFB









LF10FIG2.DL\ 13-APR-2000

Applicable Definitions

Aquifer: Subsurface rock or sediment in a formation that is saturated and sufficiently permeable to yield economic quantities of water to wells and springs.

Average Exposure (AE): If exposure occurs over time, the total exposure can be divided by a time period of interest to obtain an average exposure rate per unit time.

Contaminants of Potential Concern (COPC): contaminants that represent an actual or potential threat to human health or the environment.

Corrective Measures Study (CMS): Study to develop and evaluate possible corrective measures.

Facility: Refers to a military base or other entire federal installation, whereas the term site refers to a particular area (such as an operable unit) making up only a portion of the facility.

Florida Department of Environmental Protection (FDEP): Regulatory branch in Florida responsible for implementing state or federal environmental laws.

Groundwater: The supply of fresh water found beneath the Earth's surface, usually in aquifers, which supply wells and springs. Because ground water is a major source of drinking water, there is growing concern over contamination.

Hazard Quotient (HQ): The ratio of a single substance exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period.

Human Health Risk Assessment (HHRA): Study to determine the likelihood that a given exposure or series of exposures may have damaged or will

Installation Restoration Program (IRP):

damage the health of individuals.

The Air Force program designed to identify, investigate, and cleanup contamination associated with past Air Force activities at active AF installations; government-owned, contractor-operated facilities; off-site locations where contamination may have migrated; third party sites; and sites that the AF formerly owned or used.

Land Use Control Action Plan (LUCAP):

A Memorandum of Agreement (MOA) among Eglin, EPA, and FDEP designed to assure the effectiveness and reliability of the required Land Use Controls (LUCs) for as long as any LUC continues to be required in order for the remedial/corrective action to remain protective.

Land Use Control (LUC): is broadly interpreted to mean any restriction or control, arising from the need to protect human health and the environment, that limits use of and/or exposure to any portion of that property, including water resources. This term encompasses institutional controls, such as those involving real estate interests, governmental permitting, zoning, public advisories, deed notices, and other legal restrictions. The term may also include restrictions on access, whether achieved by means of engineered barriers such as a fence or concrete pad, or by human means, such as the presence of security

guards. Additionally, the term may involve both affirmative measures to achieve the desired restriction (e.g., night lighting of an area) and prohibitive directives (no drilling of drinking water wells). Considered altogether, the LUCs for a facility, in conjunction with the base master plan, will provide a blueprint for how its property should be used in order to maintain the level of protectiveness which one or more remedial/corrective actions were designed to achieve.

LUC Implementation Plan (LUCIP): A written plan, normally developed after a decision document has required one or more LUCs, for some particular area (operable unit, contaminated unit, and/or solid waste management unit). The LUCIP 1) identifies each LUC objective for that area (e.g., to restrict public access to the area for recreational use) and 2) specifies those actions required to achieve each identified objective (e.g., install/maintain a fence, post warning signs, record notice in deed records). LUCIPs specify what must be done to impose and maintain the required LUCs, and are therefore analogous to design and/or operation and maintenance plans developed for active remedies.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The NCP establishes procedures and standards for responding to releases of hazardous substances, pollutants and contaminants.

Permit: A RCRA permit, issued for the Eglin AFB, establishes the facility's operating conditions for managing hazardous waste.

Potable Water: Water that is safe for drinking and cooking.

RCRA Facility Investigation (RFI):

Evaluates the nature and extent of the releases of hazardous waste.

Reasonable Maximum Exposure (RME):

The maximum exposure reasonably expected to occur in a population.

Resource Conservation and Recovery Act (RCRA) of 1976 requires each hazardous waste treatment, storage, and disposal facility to manage hazardous waste in accordance with a permit issued by the U.S. Environmental Protection Agency (EPA) or a state agency that has a hazardous waste program approved by EPA.

Site Investigation (SI): Physical inspection of a potential IRP site that may include limited soil and water sampling. Used to confirm results of PA or support of a site that does not present an environmental hazard.

Solid Waste Management Unit (SWMU):

Any discernible unit (to include regulated units) at which RCRA solid waste have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste.

Statement of Basis (SB): The RCRA decision document that specifies the site remedy and establishes LUCs.

U.S. Environmental Protection Agency (**EPA**): The federal agency responsible for implementing environmental laws enacted by Congress